

M.Ed., (SEMESTER-II)

COURSE - FUNDAMENTAL OF RESEARCH METHODOLOGY

COURSE CODE - (CC-6)

UNIT-IV; QUANTITATIVE METHODS OF RESEARCH

EXPERIMENTAL RESEARCH

It often called true experimentation, uses the scientific method to establish the cause-effect relationship among a group of variables that make up a study. The true experiment is often thought of as a laboratory study, but this is not always the case; a laboratory setting has nothing to do with it. A true experiment is any study where an effort is made to identify and impose control over all other variables except one. An independent variable is manipulated to determine the effects on the dependent variables. Subjects are randomly assigned to experimental treatments rather than identified in naturally occurring groups.

WHAT IS EXPERIMENTAL RESEARCH?

Experimental research, often considered to be the “gold standard” in research designs, is one of the most rigorous of all research designs. In this design, one or more independent variables are manipulated by the researcher (as treatments), subjects are randomly assigned to different treatment levels (random assignment), and the results of the treatments on outcomes (dependent variables) are observed.

- Experimental research is best suited for explanatory research (rather than for descriptive or exploratory research), where the goal of the study is to

examine cause-effect relationships. It also works well for research that involves a relatively limited and well-defined set of independent variables that can either be manipulated or controlled.

- The unique strength of experimental research is its internal validity (causality) due to its ability to link cause and effect through treatment manipulation, while controlling for the spurious effect of extraneous variable.
- Experimental research can be conducted in laboratory or field settings. Laboratory experiments, conducted in laboratory (artificial) settings, tend to be high in internal validity, but this comes at the cost of low external validity (generalizability), because the artificial (laboratory) setting in which the study is conducted may not reflect the real world. Field experiments, conducted in field settings such as in a real organization, are high in both internal and external validity. But such experiments are relatively rare, because of the difficulties associated with manipulating treatments and controlling for extraneous effects in a field setting.
- Experimental research can be grouped into two broad categories: true experimental designs and quasi-experimental designs. Both designs require treatment manipulation, but while true experiments also require random assignment, quasi-experiments do not. Sometimes, we also refer to non-experimental research, which is not really a research design, but an all-inclusive term that includes all types of research that do not employ treatment manipulation or random assignment, such as survey research, observational research, and correlational studies.

“Experimental research is the description and analysis of what will be what will occur, under carefully controlled condition” – **John W. Best**

“It is a method of testing hypothesis” – **Johada**

“The essence of an experiment may be described as observing the effect on a dependent variable of the manipulation of an independent variable” – **Festinger**

“An experiment is an observation under controlled condition” – **F.S.Chapin**

“An experiment is a question framed on the basis of what is known and addressed to nature to elicit further knowledge. It thus, transcends mere observation or collection of materials; it is consciously directed, purposeful observation” – **E.B.Wilson**

Experimental research in its original form is based on the assumption of the established *law of single variable* by **J.S.Mill** : If two situations are similar in every respect, and one element is added or subtracted from one but not the other, any difference that develops is the result of the operation of that element added or subtracted. It means if two situations are identical in all respects the addition or subtraction of one variable contributes the differences or change or effect in two situations than the difference or effect is said to be the cause of the single additional or the single variable.

For example:

An additional or subtracted variable causes the difference between the two identical situations then it may be attributable to the variable.
